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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CheeWai Seetoh

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03/03/2003

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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

ART UNIT

PAPER NUMBER

2652

DATE MAILED: 03/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/879,359

Applicant(s)

SEETOH ET AL.

Examiner

William J. Klimowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The following phrase(s) lack clear antecedent basis within the claim(s), i.e., either the particularly recited passage fails to be properly introduced prior to its appearance at that point in the claim or the structure recited in the passage is not an inherent part of or component of the previously recited structure:

(i) Claim 28 (line 1), “the signal conditioning means.”

Additionally, since claims 29 and 30 depend directly or indirectly from claim 28, they too are thus rejected under the second paragraph of 35 U.S.C. § 112.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Komai (JP 2-166678 A).

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As per claim 1, Komai (JP 2-166678 A) discloses an actuator assembly for reading and writing data from and to a data storage disc (4) in a disc drive (1), the actuator assembly (6) comprising: an actuator arm (6) rotatably mounted adjacent the data disc (4), the arm (6) having a top surface (TS) and a bottom surface (BS) and an arm circuit alignment pin (e.g., 27, 28) projecting from one of the surfaces of the actuator arm (6), the actuator arm including a head gimbal assembly support portion (which supports the head gimbal assembly) located at a proximate end of the actuator arm (6) (FIGS. 1, 3); and an arm circuit (21) fastened to one of the surfaces of the actuator arm (6), wherein the arm circuit (21) has an arm circuit alignment aperture (e.g., 31, 32) receiving the arm circuit alignment pin (27, 28) to position the arm circuit (21) on one of the surfaces of the actuator arm (6).

As per claims 2, 7 (and claim 11, *infra*), further comprising a head gimbal assembly (between arm (6) and head (8) - FIG. 3) fastened to the head gimbal assembly support portion of the actuator arm (6), the head gimbal assembly carrying a data transducer (8) for writing and reading data to and from the data disc (4).

As per claim 6, the arm circuit (21) is fastened to the top surface of the actuator arm (6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komai (JP 2-166678 A).

See the description of Komai (JP 2-166678 A), *supra*.

As per claim 10, although Komai (JP 2-166678 A) does not expressly show wherein the arm circuit is fastened to the “bottom” surface of the actuator arm (6), it would have been obvious, given the teachings and suggestions of Komai (JP 2-166678 A) as a whole, to one of ordinary skill in the art at the time the invention was made to provide the arm circuit (21) as being attached to the bottom surface of the actuator arm, as opposed to the top surface.

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the arm circuit of Komai (JP 2-166678 A) as being attached to the bottom surface as opposed to a top surface since the benefits of attaching an arm circuit to a surface of an actuator arm that isn’t located on the actuator side is readily applicable to either the top surface of the bottom surface of an actuator arm. Either surface of the actuator arm (i.e., top or bottom, as opposed to an actuator side surface), provides improved “mounting workability” as disclosed in the abstract of Komai (JP 2-166678 A).

Furthermore, it has been held that the mere rearranging of parts (e.g., in the instant situation rearranging the location of the arm circuit to a bottom surface as opposed to a top surface) of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70 (CCPA 1950).

See the discussion of claim 11, above, previously discussed with reference to claims 2 and 7.

Claims 3, 8, 12, 13, 15 and 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komai (JP 2-166678 A) in view of Forbord et al. (US 6,018,439).

See the description of Komai (JP 2-166678 A), *supra*.

Additionally, as per claims 13 (and 5, *infra*), the arm circuit (21) is located on the “proximate” end of the actuator arm (6).

Additionally, as per claim 15, the top surface (TS) of the actuator arm (6) includes the one or more arm circuit alignment pins (27, 28); the arm circuit (21) mounted to the top surface (TS) of the actuator arm (6) and aligned to an arm circuit mounted position on the top surface of the actuator arm via the arm circuit alignment pins (27, 28) (i.e., the arm circuit (21) is positioned by pins (27, 28) in a mounted position); the head gimbal assembly (FIG. 3, mounted between the transducer (8) and arm (6)) being operably connected to the actuator arm.

Additionally, as per claim 19, an actuator coil (9B) is operably coupled to the actuator arm (6).

Additionally, as per claim 21, the actuator arm (6) includes a pivot bearing support portion (located adjacent pivot bearing (7)) located between the proximate end and the distal end of the actuator arm (6), and the actuator assembly (6) further comprises a pivot bearing (7) coupled directly to the actuator arm (6) at the pivot bearing support portion (portion of arm (6) surrounding pivot bearing (7)).

With regard to claims 3, 8, 12 and 15, although Komai (JP 2-166678 A) does not explicitly depict a gimbal circuit electrically coupled to the arm circuit, such connections are ubiquitous and conventional. As just an example, Forbord et al. (US 6,018,439) discloses a

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gimbal circuit (214) electrically coupling a data transducer (144) to an arm circuit (220), the gimbal circuit (214) being partially routed along a head gimbal assembly (146) and over a surface of an actuator arm (142) to which the arm circuit (220) is fastened, wherein the head gimbal assembly is fixed to a bottom surface of the actuator arm (as per claim 15, as seen in FIG. 5 of Forbord et al. (US 6,018,439)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the conventional gimbal circuit as disclosed by Forbord et al. (US 6,018,439) to the actuator assembly system of Komai (JP 2-166678 A).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the conventional gimbal circuit as disclosed by Forbord et al. (US 6,018,439) to the actuator assembly system of Komai (JP 2-166678 A) in order to provide the requisite electrical connection between an arm circuit and the transducer head, in order to operate the device and send/receive signals from the distally located sensing transducer, as is well known, established and appreciated in the art, as exemplified by Forbord et al. (US 6,018,439) (e.g., COL. 3, lines 11-16).

Additionally as per claims 17, 18 and 22, 23, although Komai (JP 2-166678 A) as applied to Forbord et al. (US 6,018,439) remains silent with respect to the type of connection mounting the head gimbal assembly to the actuator arm (laser-welded per claim 17, or screw mounted as per claim 18) or to the manner in which pivot bearing (7) is secured to the actuator arm (6) (as per claims 22 and 23), Official notice is taken that such head gimbal assembly to actuator arm mountings (i.e., laser-welded or screw mounted) and pivot bearing to actuator arm couplings via adhesive or press-fittings are notoriously old and well known in the art.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the head gimbal assembly of Komai (JP 2-166678 A), as applied to Forbord et al. (US 6,018,439), as being mounted in the manner prescribed by claims 17 and 18 (laser-welded or screw mounted) or press-fitting or adhesively mounting the pivot bearing to the actuator arm as per claims 22 and 23, as is conventional.

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the head gimbal assembly of Komai (JP 2-166678 A), as applied to Forbord et al. (US 6,018,439), as being mounted in the manner prescribed by claims 17 and 18 (laser-welded or screw mounted) or press-fitting or adhesively mounting the pivot bearing to the actuator arm as per claims 22 and 23, as is conventional, in order to mechanically secure the head gimbal assembly to the actuator arm or the pivot bearing (7) to the actuator arm (6) in an expeditious and conventional manner, as is well known, established and appreciated in the art.

Additionally as per claim 20, although Komai (JP 2-166678 A) as applied to Forbord et al. (US 6,018,439) remains silent with respect to adhesively mounting the voice coil (9) to the actuator arm (6), Official notice is taken that such adhesive voice coil to actuator arm mountings are notoriously old and well known in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the voice coil of Komai (JP 2-166678 A), as applied to Forbord et al. (US 6,018,439), as being mounted in the manner prescribed by claim 19 (adhesively), as is conventional.

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the voice coil of Komai (JP 2-166678 A), as applied to Forbord et al. (US 6,018,439), as

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being mounted in the manner prescribed by claim 20 (adhesively), as is conventional, in order to mechanically secure the voice coil to the actuator arm in an expeditious and conventional manner, as is well known, established and appreciated in the art.

Claims 4, 5, 9, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komai (JP 2-166678 A) in view of Forbord et al. (US 6,018,439) as applied to claims 3, 8, 12 and 15 above, and further in view of Marazzo (US 5,103,359).

See the descriptions of Komai (JP 2-166678 A) and Forbord et al. (US 6,018,439), *supra*.

As per claims 4, 9, 14 and 16, Komai (JP 2-166678 A) and Forbord et al. (US 6,018,439) do not collectively show the gimbal circuit having an aperture of alignment pin in the manner prescribed by the above noted claims.

Marazzo (US 5,103,359) teaches providing a gimbal circuit (including 53, 40) having a gimbal circuit alignment aperture (41); and a gimbal circuit alignment pin (33) projecting from an actuator arm ((15) via (36)), wherein the gimbal circuit alignment aperture (41) receives the gimbal circuit alignment pin (33) to position the gimbal circuit (40, 53) over a surface of the actuator arm.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the gimbal circuit apertures and associated pins, which extend from an actuator arm, as taught by Marazzo (US 5,103,359), to the apparatus of Komai (JP 2-166678 A) as applied to Forbord et al. (US 6,018,439).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the gimbal circuit apertures and associated pins, which extend from an actuator arm, as

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taught by Marazzo (US 5,103,359), to the apparatus of Komai (JP 2-166678 A) as applied to Forbord et al. (US 6,018,439) in order to “facilitate electrical interconnection” between first and second separate connectors along an actuator arm, as taught by Marazzo (US 5,103,359) (see, *inter alia*, abstract of Marazzo (US 5,103,359)).

See the discussion of claim 5, above, previously discussed with reference to claim 13.

Claim 24 is rejected under 35 U.S.C. 102(b) as being anticipated by Forbord et al. (US 6,018,439).

As per claim 24, Forbord et al. (US 6,018,439) discloses an actuator assembly (142) in a disc drive (100), the disc drive (100) including a data disc (104) for storing data and a flex connector (170) for communicating data signals to a printed circuit board (COL. 2, lines 5-56), the actuator assembly comprising: an actuator arm (142) having a top surface (upper surface as seen in FIG. 1) and a bottom surface (lower surface not seen in FIG. 1) rotatably mounted adjacent the data disc (104), the actuator arm including a substantially V-shaped coil support portion (FIG. 2, 150, 152) located at a distal end of the actuator arm (142), a head gimbal assembly support portion (FIG. 2, plurality of holes located opposite V-shaped support portion) located at a proximate end of the actuator arm (142), and a pivot bearing support portion located between the proximate end and the distal end of the actuator arm (see FIG. 2); a head gimbal assembly (146) carrying a data transducer (144) for writing and reading data to and from the data disc (104), the head gimbal assembly (146) being fastened to the head gimbal assembly support portion; and means for electrically coupling the data transducer to the flex connector. The means for electrically coupling are considered the head gimbal assembly circuit (214) and the arm

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circuit (220), which correspond to the structure of the arm circuit and gimbal circuit within the instant specification.

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forbord et al. (US 6,018,439) in view of Muto et al. (JP 59-168906 A).

See the description of Forbord et al. (US 6,018,439) as applied to claim 24, *supra*.

As per claim 25, although Forbord et al. (US 6,018,439) does not expressly disclose a signal conditioning portion (e.g., an integrated circuit IC which conditions data signals) fastened to either the top surface or the bottom surface of the actuator arm, such structure is known. As just an example, Muto et al. (JP 59-168906 A) discloses a signal conditioning portion (e.g., an integrated circuit IC (12) which conditions data signals) that is fastened to either the top surface or the bottom surface of the actuator arm, wherein as per claim 26, the signal conditioning portion is operable to amplify data signals (i.e., reproduction circuitry) received from the data transducer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a signal conditioning portion (e.g., an integrated circuit IC which conditions data signals) fastened to either the top surface or the bottom surface of the actuator arm of Forbord et al. (US 6,018,439) as taught by Muto et al. (JP 59-168906 A).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide a signal conditioning portion (e.g., an integrated circuit IC which conditions data signals) fastened to either the top surface or the bottom surface of the actuator arm of Forbord et al. (US 6,018,439) as taught by Muto et al. (JP 59-168906 A) in order to stabilize the circuitry of the

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recording and reproducing system by placing such a chip on an arm (thereby reducing noises introduced into the line, due to a shortened data line length).

Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forbord et al. (US 6,018,439) in view of Muto et al. (JP 59-168906 A) as applied to claim 26 above, and further in view of Komai (JP 2-166678 A).

See the descriptions of Forbord et al. (US 6,018,439) and Muto et al. (JP 59-168906 A), *supra*.

Additionally, as per claim 29, Forbord et al. (US 6,018,439) discloses a gimbal circuit (214) which is provided electrically coupling the data transducer (144) to an arm circuit (220), the gimbal circuit (214) being partially routed along the head gimbal assembly (146).

As per claim 27, Forbord et al. (US 6,018,439) as applied to Muto et al. (JP 59-168906 A), does not expressly show the arm circuit having an arm circuit alignment aperture receiving an arm circuit alignment pin projecting from the top surface of the actuator arm to position the arm circuit on the top surface of the actuator arm.

As discussed, *supra*, Komai (JP 2-166678 A) discloses such a feature in order to “improve mounting workability” of the arm circuit to the actuator.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the arm circuitry and associated alignment pin mounting structure, as taught by Komai (JP 2-166678 A), to the apparatus of Forbord et al. (US 6,018,439) as applied to Muto et al. (JP 59-168906 A) in the claimed invention.

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The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the arm circuitry and associated alignment pin mounting structure, as taught by Komai (JP 2-166678 A), to the apparatus of Forbord et al. (US 6,018,439) as applied to Muto et al. (JP 59-168906 A) in the claimed invention in order to obtain the benefits espoused by Komai (JP 2-166678 A) including improving the “mounting workability.” See abstract of Komai (JP 2-166678 A).

As per claim 28, see the discussion of claim 10, *supra*, such reasoning being applicable to claim 28, in combination with Forbord et al. (US 6,018,439) and Muto et al. (JP 59-168906 A).

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forbord et al. (US 6,018,439) in view of Muto et al. (JP 59-168906 A) and further in view of Komai (JP 2-166678 A) as applied to claim 29 above, and further in view of Marazzo (US 5,103,359).

See the descriptions of Komai (JP 2-166678 A), Forbord et al. (US 6,018,439) and Muto et al. (JP 59-168906 A), *supra*.

As per claim 30, Komai (JP 2-166678 A), Forbord et al. (US 6,018,439) and Muto et al. (JP 59-168906 A) do not collectively show the gimbal circuit having an aperture of alignment pin in the manner prescribed by the above noted claims.

As discussed, *supra*, Marazzo (US 5,103,359) teaches providing a gimbal circuit (including 53, 40) having a gimbal circuit alignment aperture (41); and a gimbal circuit alignment pin (33) projecting from an actuator arm ((15) via (36)), wherein the gimbal circuit alignment aperture (41) receives the gimbal circuit alignment pin (33) to position the gimbal circuit (40, 53) over a surface of the actuator arm.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the gimbal circuit apertures and associated pins, which extend from an actuator arm, as taught by Marazzo (US 5,103,359), to the apparatus of Komai (JP 2-166678 A) as applied to Forbord et al. (US 6,018,439) and Muto et al. (JP 59-168906 A).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the gimbal circuit apertures and associated pins, which extend from an actuator arm, as taught by Marazzo (US 5,103,359), to the apparatus of Komai (JP 2-166678 A) as applied to Forbord et al. (US 6,018,439) and Muto et al. (JP 59-168906 A) in order to "facilitate electrical interconnection" first and second separate connectors along an actuator arm, as taught by Marazzo (US 5,103,359) (see, *inter alia*, abstract of Marazzo (US 5,103,359)).

Conclusion

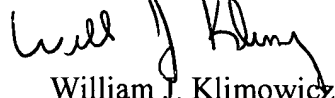
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (703) 305-3452. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.


William J. Klimowicz
Primary Examiner
Art Unit 2652

WJK
February 21, 2003